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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Marc HUSEMANN, et al.
U.S. Serial No.: 10/667,837
Filed : September 22, 2003
For : Preparation of UV-transparent pressure sensitive adhesives
Art Unit : 1711
Examiner : Nathan M. Nutter

March 1, 2007

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDED BRIEF ON APPEAL PURSUANT TO 37 CFR § 41.37

Sir:

This Amended Brief is being filed in response to the Notification of Non-Compliant Appeal Brief dated February 2, 2007.

This is an appeal from the final rejection of an Examiner of Art Unit 1711.

1. REAL PARTY IN INTEREST

The instant application is owned by tesa AG, record owner hereof.

2. RELATED APPEALS AND INTERFERENCES

The undersigned is not aware of any appeals, interferences, reexaminations,

infringement actions or the like in any related applications.

3. STATUS OF CLAIMS

The claims pending in this application are claims 1-9; all of said claims are finally rejected and all of said claims are on appeal.

4. STATUS OF AMENDMENTS

No amendments have been filed subsequent to final rejection.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 relates to a novel process for preparing UV-transparent pressure-sensitive adhesives, having a UV transparency at 300 nm of more than 95% (page 1, line 34). In the process, an acrylic copolymer composition is formed having a weight average molecular weight of less than 300,000 g/mol by polymerizing a monomer mixture comprising (a1) 75 to 99% by weight of specific acrylic esters and/or methacrylic esters; (a2) 0 to 10% by weight acrylic acid and/or methacrylic acid, (a3) 0.2 to 5% by weight of olefinically unsaturated monomers which contain at least one UV-crosslinking functional group per monomer and (a4) 0 to 20% by weight of olefinically unsaturated monomers which are different than the olefinically unsaturated monomers (a3) and which contain at least one functional group per monomer (page 2, lines 1-19). From 2 to 20% by weight of a silicate filler having a maximum particle diameter of 50 nm is mixed into the composition either before or after polymerization of the monomer mixture (page 2, lines 21-23).

Appellants have discovered that, by keeping the weight average molecular weight of the copolymer composition at less than 300,000 g/mol and the maximum particle diameter of the silicate filler at 50 nm, the UV transparency at 300 nm of the composition is more than 95% (page 1, last paragraph) and the difficulties encountered by the prior art are avoided. Specifically, in the prior art, the inclusion of fillers in the adhesives resulted in adhesives having relatively low cohesion, since the fillers reduced the transparency and interfered with UV cross-linking (see the discussion of Reference Example 3 on page 17). On the other hand, the complete absence of fillers also resulted in low cohesion of low molecular weight adhesives. See the discussion of Examples 1-4 vs. Reference Examples 1 and 2 in the paragraph following Table 1 on page 17.

The present invention overcomes the deficiencies of the prior art adhesive compositions.

6. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

The grounds for rejection to be reviewed on appeal are the rejection of claims 1-9 under 35 U.S.C. 103(a) as obvious over Husemann (US 6,958,186).

7. ARGUMENTS

Husemann et al (US 6,958,186) concerns a double-sided adhesive tape, having layers A and C of adhesive, on a polyurethane carrier B.

Adhesive A is a heat-activatable adhesive, which could be a poly(meth)acrylate (col. 2, line 58). Nowhere is any molecular weight given for this adhesive, and nowhere

is it taught or suggested that any filler could be used with the heat-activatable adhesive. That part of the reference that pertains to layer A cannot therefore be seen as even remotely suggesting Appellants' novel process.

Adhesive C can also be a poly(meth) acrylate (col. 8, lines 5-15).

However the molecular weight of Adhesive C, given as number average molecular weight (M_n), is preferably 20,000 to 2,000,000 and for further use as a hotmelt pressure sensitive adhesive is given as from 100,000 to 500,000. This range does not suggest anything about Appellants' weight-average molecular weight (M_w), which must be less than 300,000 g/mol. From the Husemann reference, no one would have any reason to even suspect that a molecular weight of 300,000 would be any different than a molecular weight of 500,000 with respect to UV transparency.

As indicated above and taught in Appellants' specification, the claimed molecular weight range, together with the specific silicate filler claimed, make it possible to produce a UV-transparent pressure sensitive adhesive which has a UV transparency at 300 nm of more than 95%. Nothing in Husemann '186 teaches or suggests that anything about molecular weight or silicate filler characteristics could enable such a high UV transparency.

A particular parameter must first be recognized as a result-effective variable before a determination of an optimum range might be characterized as routine experimentation (MPEP § 2144.05 (II)(B)). There is nothing in this reference that would

indicate that a molecular weight below 300,000, when combined with 2-20% of a silicate filler having a maximum particle diameter of 50 nm could produce a pressure sensitive adhesive having a UV transparency of 95%.

Molecular weight is not taught or suggested to be a result-effective variable by the Husemann '186 reference, and Appellants' specific molecular weight cannot be seen as obvious over this reference. Nor is particle diameter of 50 nm maximum, together with an amount of 2-20% taught as result-effective variables with respect to achieving a UV transparency of 95%.

Husemann'186 teaches that it is "possible optionally" to add fillers to adhesive C (col. 13, lines 61-64), and that it is preferable to raise the internal strength by crosslinking. Husemann does not teach or suggest, however, any way that a layer of adhesive could have a certain kind of filler and still have a UV transparency of 95%.

Those skilled in the art know that the presence of filler in an adhesive interferes with UV transparency and therefore with crosslinking, and would not expect an adhesive having 2 - 20 % of filler to have a high UV transparency.

Indeed, none of Husemann's Examples show an adhesive layer C produced with any fillers, and subsequently UV crosslinked.

Moreover, there is nothing in Husemann that teaches or suggests any size range for any filler, let alone a silicate filler. There is absolutely nothing in Husemann that

would lead those skilled in the art to a silicate filler having a maximum particle diameter of 50 nm. As with the molecular weight range, the particle diameter cannot be seen as a result-effective variable unless there is something in the reference that recognizes it as such.

Husemann also does not teach or suggest anything at all about the amounts of any fillers that could be used, especially in an adhesive that is intended to be UV crosslinked, while at the same time retaining a UV transparency of 95%.

Nothing in the Husemann reference could possibly lead those skilled in the art to a process for preparing a pressure-sensitive adhesive that has a molecular weight of less than 300,000, 2 to 20% of a silicate filler having a maximum particle diameter of 50 nm, and a UV transparency of more than 95%.

Appellants' claims cannot therefore be seen as obvious over the Husemann reference, and the rejection of claims 1-9 under 35 U.S.C. 103(a) as obvious over Husemann et al (US 6,958,186) should accordingly REVERSED.

8. CONCLUSION

Wherefore it is submitted that the final rejection is in error and should be **REVERSED**.

AUTHORIZATION TO CHARGE FILING FEE TO DEPOSIT ACCOUNT

Appellant is:

☐ a small entity

☒ other than a small entity

It is requested that the fee for the filing of the Brief on Appeal be charged to the undersigned's Deposit Account No. 14-1263.

Please charge:

☐ \$ 250.00 for small entity

☒ **\$500.00 for other than small entity.**

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Appellants request that this be considered a petition therefor. Please charge the required Petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess to our Deposit Account No. 14-1263.

Respectfully submitted,
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9. CLAIMS APPENDIX

The claims are appeal read as follows:

1. A process for preparing UV-transparent pressure sensitive adhesives which have a UV transparency at 300 nm of more than 95%, comprising the steps of:

- (a) polymerizing a monomer composition comprising

- (a1) from 75 to 99.8% by weight of acrylic esters and/or methacrylic esters of the formula $\text{CH}_2=\text{CH}(\text{R}_1)(\text{COOR}_2)$, where R_1 is H or CH_3 and R_2 is an alkyl chain having 1 to 20 carbon atoms;

- (a2) from 0 to 10% by weight of acrylic acid and/or methacrylic acid of the formula $\text{CH}_2=\text{CH}(\text{R}_1)(\text{COOH})$, where R_1 is H or CH_3 ;

- (a3) from 0.2 to 5% by weight of olefinically unsaturated monomers which contain at least one UV-crosslinking functional group per monomer; and

- (a4) from 0 to 20% by weight of olefinically unsaturated monomers which are different than the olefinically unsaturated monomers (a3) and which contain at least one functional group per monomer;

to form a copolymer composition having a weight average molecular weight M_w of less than 300,000 g/mol, and

- (b) mixing in from 2 to 20% by weight, based on the weight of copolymer composition, of a silicate filler before or after the polymerization of the monomer composition in step (a), the silicate filler having a maximum particle diameter of 50 nm.

2. The process as claimed in claim 1, comprising the further step of adjusting the residual solvent content of the pressure sensitive adhesive to less than 1%, based on the weight of pressure sensitive adhesive.
3. The process as claimed in claim 2, wherein the residual solvent content is adjusted to less than 0.2%, based on the weight of pressure sensitive adhesive.
4. The process as claimed in claim 1, wherein the copolymer composition obtained in step (a) is melted and then the silicate filler is added and distributed homogenously in the melted copolymer composition.
5. The process as claimed in claim 1, wherein the polymerization in step (a) is a free-radical addition polymerization.
6. The process as claimed in claim 5, wherein the monomer composition is heated to a temperature of between 50 and 160 °C.
7. The process as claimed in claim 1, wherein the monomer composition in step (a) is polymerized in bulk.
8. The process as claimed in claim 7, wherein the polymerization is initiated with UV light, from 10 to 30% of the monomer composition is polymerized, and the resulting mixture is transferred to water and polymerized to completion.
9. The process as claimed in claim 1, wherein the monomer composition in step (a) is polymerized by anionic addition polymerization.

10. EVIDENCE APPENDIX

No evidence under §§ 1.130, 1.131, or 1.132 has been submitted.

11. RELATED PROCEEDINGS APPENDIX

There have been no decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 CFR 41.37